MATERIAL SAFETY DATA SHEET

SRM Supplier: **National Institute of Standards and Technology**
Standard Reference Materials Program
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SRM Number: 3068
MSDS Number: 3068
SRM Name: Chlordane in Methanol
Date of Issue: 14 May 2003

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SECTION I. MATERIAL IDENTIFICATION

Material Name: Chlordane in Methanol

Description: SRM 3068 consists of five 2-mL ampoules, each containing approximately 1.2 mL of a solution of chlordane in methanol.

Other Designations: **Chlordane** (1,2,4,5,6,7,8,8-octochloro-2,3,3a,4,7,7a-hexahydro-4,7-methano-1h-indene; 1,2,4,5,6,7,8,8-octochloro-3a,4,7,7a-tetrahydro-4,7-methanoindan; chloridan; *Toxichlor**) in **Methanol** (methyl alcohol; wood alcohol; methyl hydroxide; carbinol; monohydroxymethane; wood spirit; wood naphtha; methylol; *Colonial Spirit**; *Columbian Spirit**; *Pyroxylic Spirit**)

Name	Chemical Formula	CAS Registry Number
Methanol	CH_3OH	67-56-1
Chlordane	$C_{10}H_6Cl_8$	12789-03-6

DOT Classification: Methanol, UN1230 (Small Quantity Exemption)

Manufacturer/Supplier: Available from a number of suppliers

* Trade name

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Methanol	99	ACGIH TLV-TWA (skin): 200 mg/kg or 262 mg/m^3
		OSHA TLV-TWA (skin): 200 mg/kg or 262 mg/m^3
		Human, Inhalation: TC_{LO}: 86000 mg/m^3
		Human, Inhalation: TC_{LO}: 300 mg/kg
		Human, Oral: LD_{LO}: 143 mg/kg
		Man, Oral: TD_{LO}: 3429 mg/kg
		Rat, Oral: LD_{50}: 5628 mg/kg
Chlordane	1	ACGIH TWA (skin): 0.5 mg/m^3
		OSHA TWA (skin): 0.5 mg/m^3
		Human, Oral: LD_{LO}: 29 mg/kg
		Rat, Oral: LD_{50}: 11 g/kg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Methanol	Chlordane
Appearance and Odor: a clear, colorless liquid with a characteristic alcoholic odor	**Appearance and Odor:** amber viscous liquid; odor not available
Relative Molecular Mass: 32.04	**Relative Molecular Mass:** 409.76
Density: 0.7914 g/mL	**Density (water = 1):** 1.59 to 1.63
Boiling Point: 65 °C	**Boiling Point:** not available
Freezing Point: -94 °C	**Freezing Point:** not available
Vapor Pressure (@ 20 °C): 97.25 mm Hg	**Vapor Pressure (@ 25 °C):** 0.00001 mm Hg
Evaporation Rate (butyl acetate = 1): 4.6	**Evaporation Rate (butyl acetate = 1):** not available
Viscosity (@ 20 °C): 0.59 cP	**Viscosity (@ 25 °C):** 6 900 cP
Water Solubility: soluble	**Water Solubility (@ 25 °C):** 0.1 mg/kg
Solvent Solubility: soluble in ether, benzene, alcohol, acetone, chloroform, ethanol, ketones, and most other organic solvents	**Solvent Solubility:** soluble in kerosene, aliphatic and aromatic solvents

NOTE: The physical and chemical data provided are for the pure components. Physical and chemical data for this methanol/chlordane solution **DO NOT** exist. The actual behavior of the solution may differ from the individual components.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Methanol
Flash Point: 11 °C **Method Used:** Closed Cup **Autoignition Temperature:** 385 °C

Flammability Limits in Air (Volume %): **UPPER:** 36
LOWER: 6.0

Unusual Fire and Explosion Hazards: Methanol is a severe fire and explosion hazard when exposed to heat or flame. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor and air mixtures are explosive.

Chlordane is a negligible fire hazard.

Extinguishing Media: Use alcohol-resistant foam, dry chemical, carbon dioxide, or water spray.

Special Fire Procedures: Fire fighters should wear a self-contained breathing apparatus (SCBA) with a full face piece in the pressure demand or positive mode and other protective clothing.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: Avoid contact with heat, sparks, flames, or other sources of ignition. Avoid inhalation of vapors or combustion by-products. Avoid contact with the skin. **DO NOT** allow the material to contaminate water sources.

Incompatibility (Materials to Avoid): Methanol is incompatible with halo carbons, combustible materials, metals, oxidizing materials, halogens, metal carbide, bases, and acids.

Chlordane is incompatible with bases, oxidizing materials and metals.

See Section IV: *Unusual Fire and Explosion Hazards*

Hazardous Decomposition or By-products: Thermal decomposition products of methanol may include toxic oxides of carbon. Thermal decomposition products of chlordane may include phosgene, oxides of carbon, and halogenated compounds.

Hazardous Polymerization _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **X** **Inhalation** **X** **Skin** **X** **Ingestion**

Methanol: Methanol is a fatal poison. This material is harmful if inhaled or absorbed through skin. Ingestion may be fatal or cause blindness. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure can cause damage to the eyes, liver, heart, and kidneys. Methanol may also cause gastrointestinal disturbances, convulsions, and/or nerve damage.

Chlordane: Inhalation of chlordane may produce symptoms of blurred vision, cough, confusion, ataxia, headache, weakness, and dizziness. Central nervous system stimulation may also occur. Chronic exposure to chlordane may cause lightheadedness, nausea, cough, tremors, arthralgias, fatigue, and bruising. Pancytopenia, aplastic, hemolytic, and megaloblastic anemias, and leukemia have been reported.

Eye and/or skin contact with chlordane may be irritating. Skin absorption has caused blurred vision, confusion, ataxia, headache, dizziness, weakness, and delirium. Lethal doses have been reported from dermal absorption. Abnormal EEG patterns have also been observed.

Ingestion of chlordane may cause abdominal pain, nausea, vomiting, and diarrhea. Chlordane may stimulate the central nervous system. Headache, blurred vision, hyper-excitability, muscle twitching, tremor, incoordination, and ataxia may also occur. Chlordane may be excreted slowly from the body. Repeated or prolonged exposure to this material produced liver and kidney damage, myocardial damage, and marked damage to the lungs of experimental animals. Reproductive effects have also been reported in animals. This material may cross the placenta and may be excreted in breast milk.

Medical Conditions Generally Aggravated by Exposure: Methanol may affect eye disorders, kidney disorders, skin disorders, and allergies. Chlordane may affect liver and convulsive disorders.

Listed as a Carcinogen/Potential Carcinogen (Methanol):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

Listed as a Carcinogen/Potential Carcinogen (Chlordane):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Watch for chemical irritations and treat them accordingly. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingested, wash out mouth with water. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: **Methanol:** central nervous system (CNS)
Chlordane: central nervous system (CNS) and liver

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Evacuate nonessential personnel. Absorb small spills with sand or other absorbent material and place into containers for disposal. **DO NOT** flush into a sewer. Keep out of watersheds and waterways.

Waste Disposal: Follow all federal, state, and local laws governing disposal.

Handling and Storage: Persons handling this material must wear protective eyewear, clothing, and gloves to prevent contact with this material. This material contains chlordane, which has been reported to have possible carcinogenic properties, and should be handled with care.

> **NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Protect containers from physical damage. Sealed ampoules, as received, should be stored in the dark at temperatures lower than 30 °C. Keep material in a well-ventilated area away from incompatible materials.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources:
MDL Information Systems, Inc., MSDS *Methyl Alcohol*, 19 June 2001.
MDL Information Systems, Inc., MSDS *Chlordane*, 22 March 2001.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.